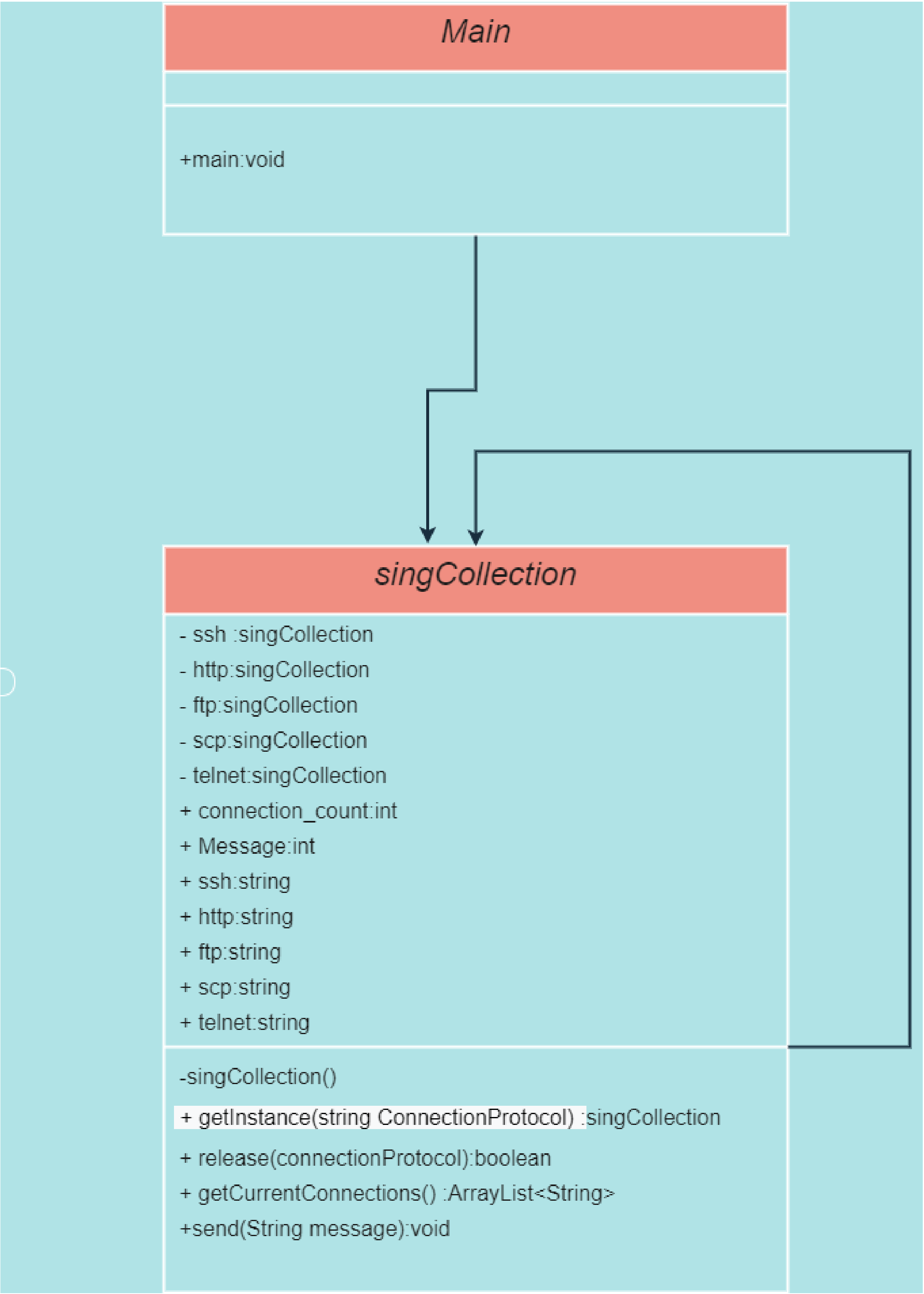
Assignment 2

Class diagram :

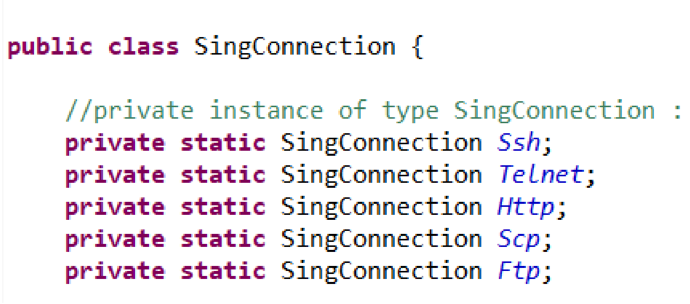


Description:

At First, I create a class that name singCollection , this class following singleton design pattern , This means that I will only create one object of each protocol :

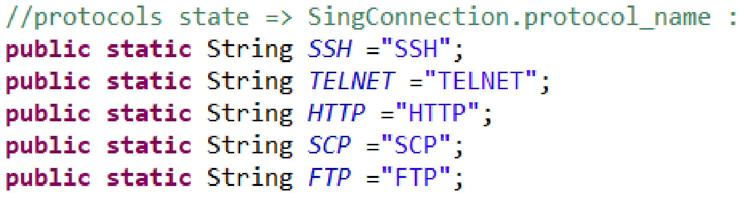
To achieve this, I followed this implementation :

1. In class singCollection I'm declare 5 private static objects of a data type singCollection point to null .



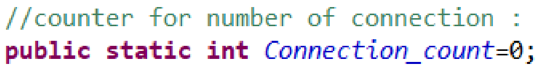
```
public class SingConnection {

    //private instance of type SingConnection :
    private static SingConnection Ssh;
    private static SingConnection Telnet;
    private static SingConnection Http;
    private static SingConnection Scp;
    private static SingConnection Ftp;
```

2. then I'm created another 5 public static variables of a data type string for each protocol "telnet,http,ssh,scp,ftp" each one having a value like it's name .



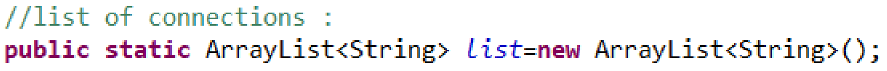
```
//protocols state => SingConnection.protocol_name :
public static String SSH ="SSH";
public static String TELNET ="TELNET";
public static String HTTP ="HTTP";
public static String SCP ="SCP";
public static String FTP ="FTP";
```

3. I created a counter to count the connections which is must by at most 3 .



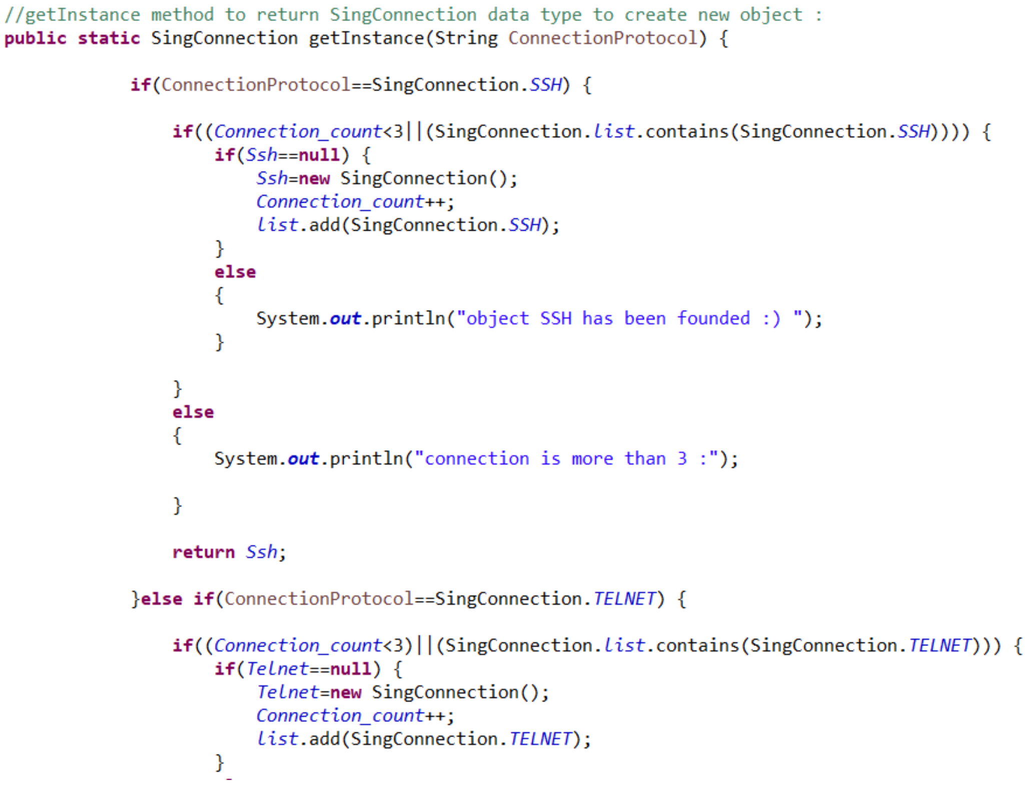
```
//counter for number of connection :
public static int Connection_count=0;
```

4. I created array list of data type string to add the connections in it .



```
//list of connections :
public static ArrayList<String> list=new ArrayList<String>();
```

5.I created getinstane function that return object from singConnection type to create a new object or to return the current protocol connection if the Connection number is less than 3 or if the list already contain the protocol connection .

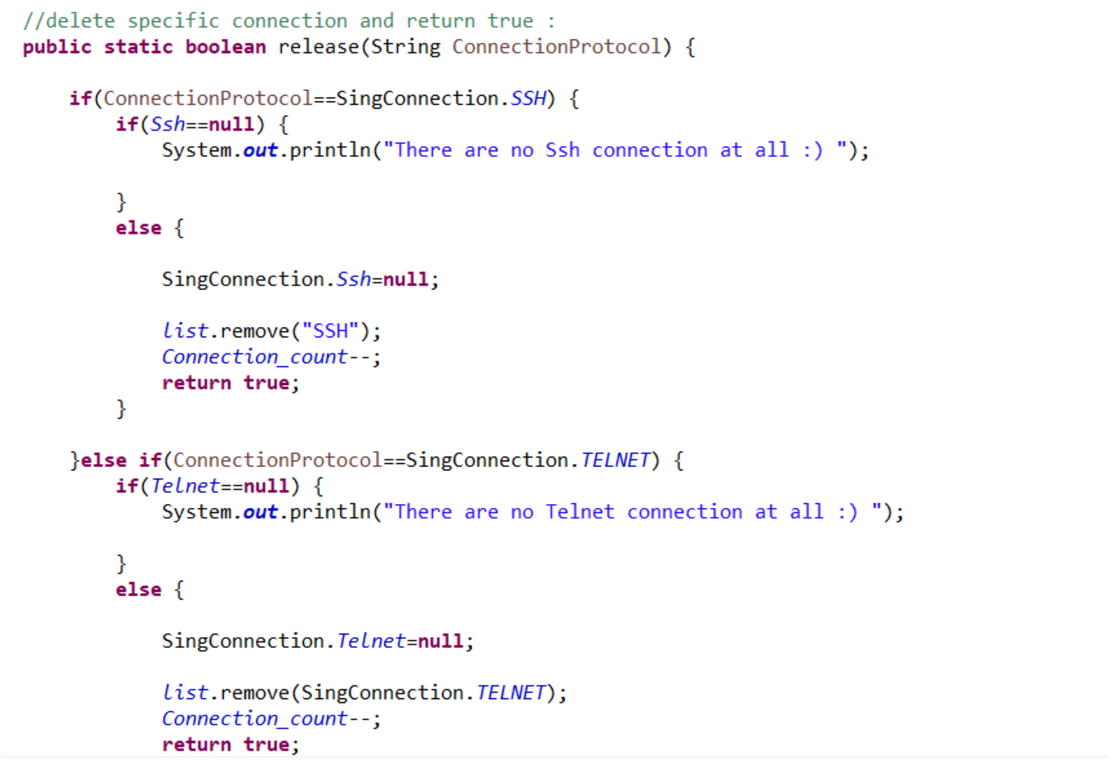


```
//getInstance method to return SingConnection data type to create new object :
public static SingConnection getInstance(String ConnectionProtocol) {

            if(ConnectionProtocol==SingConnection.SSH) {

                if((Connection_count<3||(SingConnection.list.contains(SingConnection.SSH)))) {
                    if(Ssh==null) {
                        Ssh=new SingConnection();
                        Connection_count++;
                        list.add(SingConnection.SSH);
                    }
                    else
                    {
                        System.out.println("object SSH has been founded :) ");
                    }

                }
                else
                {
                    System.out.println("connection is more than 3 :");

                }

                return Ssh;

            }else if(ConnectionProtocol==SingConnection.TELNET) {

                if((Connection_count<3)||(SingConnection.list.contains(SingConnection.TELNET))) {
                    if(Telnet==null) {
                        Telnet=new SingConnection();
                        Connection_count++;
                        list.add(SingConnection.TELNET);
                    }
```

this method will receive connectionProtocol argument from type String and chick this string if it's value fulfills the first condition sentence "is it equal singConnection.protocol_name?" , it will enter into the second condition, which is if the number of connections is less than 3, or the protocol is actually in the list of connections ,it will enter into the third condetion that if the protocol object of type singConnection ==null then we will use a new operator to declare a new object and increase the number of connections by one and add this protocol connection to list of connections finally i return the protocol object . else i return the protocol object .

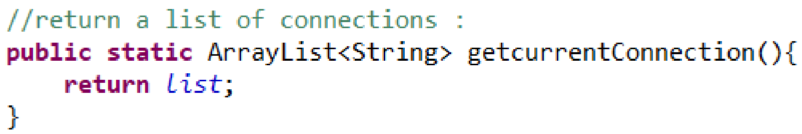
if connectionProtocol argument doesn't fulfills any if statement then i print that this protocol dose not founded .

6. I created release function that return Boolean when we delete specific connection if it is not equal null , then i make its value equal null and remove it from list of connections protocol and decrease the connection counter by one .



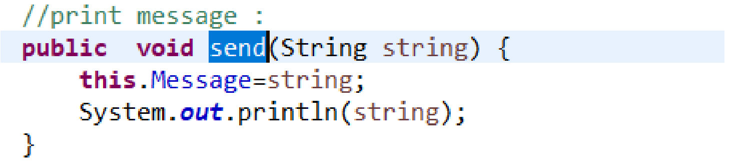
```
//delete specific connection and return true :
public static boolean release(String ConnectionProtocol) {

    if(ConnectionProtocol==SingConnection.SSH) {
        if(Ssh==null) {
            System.out.println("There are no Ssh connection at all :) ");

        }
        else {

            SingConnection.Ssh=null;

            list.remove("SSH");
            Connection_count--;
            return true;
        }

    }else if(ConnectionProtocol==SingConnection.TELNET) {
        if(Telnet==null) {
            System.out.println("There are no Telnet connection at all :) ");

        }
        else {

            SingConnection.Telnet=null;

            list.remove(SingConnection.TELNET);
            Connection_count--;
            return true;
```

7. I created getcurrentConnection function witch return Array List of type string witch contain all connections protocol .



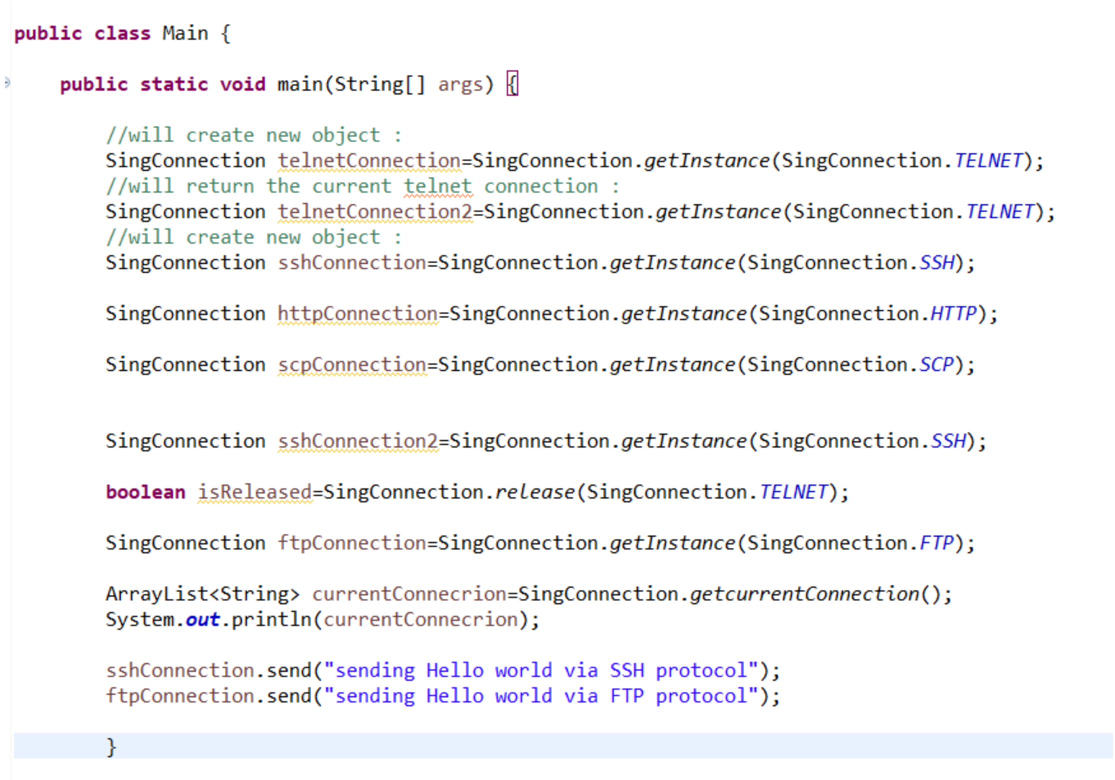
```
//return a list of connections :
public static ArrayList<String> getcurrentConnection(){
    return list;
}
```

8. I created send function from data type void to print a massage says : sending [my message] via protocol name .



```
//print message :
public  void send(String string) {
    this.Message=string;
    System.out.println(string);
}
```

9. I created Main class for test the program and for testing SingConnection Class with its methods .



```
public class Main {

    public static void main(String[] args) {

        //will create new object :
        SingConnection telnetConnection=SingConnection.getInstance(SingConnection.TELNET);
        //will return the current telnet connection :
        SingConnection telnetConnection2=SingConnection.getInstance(SingConnection.TELNET);
        //will create new object :
        SingConnection sshConnection=SingConnection.getInstance(SingConnection.SSH);

        SingConnection httpConnection=SingConnection.getInstance(SingConnection.HTTP);

        SingConnection scpConnection=SingConnection.getInstance(SingConnection.SCP);


        SingConnection sshConnection2=SingConnection.getInstance(SingConnection.SSH);

        boolean isReleased=SingConnection.release(SingConnection.TELNET);

        SingConnection ftpConnection=SingConnection.getInstance(SingConnection.FTP);

        ArrayList<String> currentConnecrion=SingConnection.getcurrentConnection();
        System.out.println(currentConnecrion);

        sshConnection.send("sending Hello world via SSH protocol");
        ftpConnection.send("sending Hello world via FTP protocol");

    }
```

Finally , my code satisfies the requirements . Where created one object for each protocol .

And created a connection via ssh, telnet, http, scp and ftp protocols taking into consideration that's the app can create 3 concurrent connections at most and this is implemented in the code & Each protocol of the same type points to one location .

Regards, Dina Alwaneh .

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